

CHEMICAL Compositions

Department of Chemistry Newsletter
The University of Texas at Austin

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chemalum@cm.utexas.edu



Letter from the Chair

We bid farewell to Brent Iverson as Chair in July when he became the Dean of Undergraduate Studies here at UT, so I stepped in as the new chairperson. Brent served for three years with incredible diplomacy and leadership, and we remain grateful for his dedicated efforts to strengthen the department.

I recruited David Vanden Bout to serve as Associate Chair, and he is handling all of the instructional aspects of our program. We are both delighted to serve the department and look forward to working closely with our faculty, staff, and students.

With the new Dean of the College of Natural Sciences just completing her first year and a new Provost starting this month, there have been significant changes that have brought fresh perspectives and new visions for UT. For those of you who have not visited East '29 Wing lately, you will find a number of changes. The east portion of the West Wing was refurbished during the last two years, and the Mallet library underwent a make-over (more details in our next newsletter). The traditional divisional-based staff system has been centralized in the Chairman's Office, thus encouraging an era of efficiency and collegiality.



Prof. Jenny Brodbelt
chemchair@cm.utexas.edu

All of these changes echo the new university theme of "quality, not quantity." We enjoy hearing from our alum, and we wish to invite you back to reacquaint yourself with Welch Hall and its friendly inhabitants.

Focus on Giving

Raymond E. Davis Endowed Scholarship in Chemistry and Biochemistry

Established in 2008 by the Board of Regents to honor Professor Ray Davis, this endowment provides scholarship support to full time undergraduate students of high academic

achievement in the Department of Chemistry. Professor Davis passed away in May, 2013.

James E. and Ruth Ann Boggs Endowment

This endowment benefits the Mallet Chemistry Library. Funds

distributed from the endowment are managed under the University of Texas Libraries budget for the Chemistry Library and used for the enhancement of library resources. The endowment was established in 1998 by James and Ruth Ann Boggs. Dr. Boggs passed away in June, 2013.

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Faculty News

In Memorial, Professor Jim Boggs



On June 2, 2013, Professor Emeritus James E. (Jim) Boggs passed away. Professor Boggs was born on June 9, 1921 in Lakewood, Ohio. He graduated from Oberlin College in 1943, and received his MS and Ph.D. degrees in Chemistry from the University of Michigan. During World War II, Professor Boggs worked for the Manhattan Project, developing techniques for uranium isotope separation.

Professor Boggs joined the Department of Chemistry at the University of Texas at Austin in 1953. Formally retiring in his 70s, Professor Boggs continued his research and publication in chemistry. Among other professional awards, Professor Boggs was a Fellow of the American Chemical Society and received the prestigious Dr. Barbara Mez-Starck Prize for his outstanding contributions to experimental structural chemistry and molecular physics. His work includes 400 original scientific publications including books and major reviews. His students and former postdoctoral associates continue to develop his ideas in many countries throughout the world. In his later years at UT, he worked extensively with the Overseas Study Program.

Professor Boggs is preceded in death by his wife of 54 years, Ruth Ann, and is survived by daughters Carol Boggs (Ward Watt) of Stanford, CA; Ann McCarley (Lon McCarley) of Centennial, CO; Lynne Cariker (Bill Cariker) of Manor, TX; and grandchildren Ryan and Beth McCarley.

Biochemistry Joins Department of Molecular Biosciences

By Karen Browning, Associate Department Chair in the Department of Molecular Biosciences

Beginning September 1, 2013, the Department of Chemistry and Biochemistry became the Department of Chemistry, with the Biochemists joining the Department of Molecular Biosciences. The reorganization of the School of Biological Sciences (SBS) into three new departments (Molecular Biosciences, Neuroscience and Integrative Biology) provided an opportunity for the Biochemistry faculty to join with faculty from the former SBS sections of Molecular Genetics and Microbiology and Molecular Cell and Development Biology.

The new Department of Molecular Biosciences has over 60 faculty that span all areas of biological research from biochemistry to cell biology to genomics.

Biochemistry undergraduate and graduate degrees now are administered in the Department of Molecular Biosciences. Biochemistry faculty will continue to reside in Welch Hall, as well as the Moffet Molecular Biology building. We look forward to strong connections and collaborations between the Departments of Chemistry and Molecular Biosciences both in research and teaching missions, as well as new exciting interactions with the coming medical school.



More faculty news

- Congratulations to **Ben Liu** on being a 2014 recipient of the Arthur C. Cope Late Career Scholars Award.
- Congratulations to **Simon Humphrey** on being named a 2013 Regents' Outstanding Teaching Award winner.
- Congratulations to **Eric Anslyn** on receiving the Edward Leete Award for outstanding contributions to teaching and research in organic chemistry.
- More award highlights and faculty news can be found on [our website](#).

Faculty News

In Memorial, Professor Raymond Davis



Professor Emeritus Raymond Davis passed away Wednesday, May 29th, 2013. Professor Davis was born November 7, 1938 in Hobbs, New Mexico. From 1960 to 1964, Professor Davis attended graduate school at Yale University. Ray and his family spent two years in Buffalo, New York where he completed post-doctoral work as a cancer research scientist at Roswell Park Memorial Institute. Professor Davis joined the Department of Chemistry at the University of Texas at Austin in 1966.

Professor Davis retired from the University of Texas at Austin after 40 years of teaching and research. During this time, he received an impressive number of awards for his outstanding teaching, including the Chancellor's Council Outstanding Teaching Award (1980-81), the William David Blunk Memorial Professorship, Outstanding Professor Award, UT Austin freshmen honor society, CNS Advisory Council Teaching Excellence Award, CNS Teaching Excellence Award (all in 1984-85), Minnie Stevens Piper Professorship (1992), Academy of Distinguished Teachers (inaugural class, 1995), Jean Holloway Award for Excellence in Teaching (1996), and Dads' Association Centennial Teaching Fellowship (1996-97). He continued to coauthor his textbooks until 2013.

Ray is survived by his wife, Sharon; daughter and son-in-law Angela and Rick Wampler; daughter and son-in-law, Laura and Mikel Kane; son Brian Edward Davis; his brother, Ken and wife, Candace; his sister, Barbara; three brothers-in-law: Richard, Jon and Gary Klingenberg and wives; and his many grandchildren.

Sean Roberts and Emily Que Join Department

January 2014, Chemistry welcomes new recruit Sean Roberts to the Department. Dr. Roberts will join the department as an assistant professor.



Dr. Roberts received his Ph.D. from MIT under the supervision of Andrei Tokmakoff. He went on to hold a postdoctoral position at the University of Southern California in the labs of Stephen Bradforth and Alexander Benderskii.

"I am extremely happy to join the faculty at UT Austin and look forward to working with my colleagues to teach the next generation of scientific scholars," says Dr. Roberts.

One of Dr. Roberts' primary research goals is the use of tools of ultrafast nonlinear spectroscopy to build a comprehensive picture of the interfacial structure and dynamics of nanoscale materials.

The Department of Chemistry will welcome Emily Que Summer 2014. Dr. Que also joins the department as an assistant professor.



"I am excited to join the UT Chemistry Department in Summer 2014. I look forward to bringing my interests in bioinorganic chemistry and chemical biology to the department and interacting with the faculty and students," says Dr. Que.

Dr. Que received her Ph.D. from UC-Berkeley under the direction of Christopher Chang. She is currently a post-doctoral fellow at Northwestern University in the lab of Thomas O'Halloran.

Dr. Que's research interests span the fields of bioinorganic chemistry and chemical biology. Her future plan centers on the development of coordination chemistry approaches for studying cancer and reproductive biology.

Student and Alumni News

Stellar Student Spotlight - Justin Kirkland

Lecturer Dr. Cynthia LaBrake describes senior Justin Kirkland as well-respected by his peers for his deep content knowledge. Justin participates in a [peer teaching class](#), assisting and mentoring his fellow students.

Background and Interests: I was born in Middleburg, Florida. I spent most of my formative years in Knoxville, Tennessee. Most of my years in grade school were spent sleeping, reading, and ignoring most of my teachers. I did not begin to have a growing interest in science (or really school in general) until I got to high school. My interests began to grow as I became more and more fascinated with chemistry and physics.

Describe your experience as a tutor and with the peer teaching class: Being a peer leader and learning assistant has aided me dearly as I've progressed in my college career. I started as a sophomore thinking my job would be to "grade chemistry exams." So, I showed up the first day having no clue I would need to be meandering through the class and helping the students face-to-face. It was a very terrifying experience, but it was equally enlightening. Not only have I learned the basic foundations of chemistry better than I could ever hope to, but I also have grown as a public speaker. I went from having no confidence as a speaker to being able to talk perfectly fine in front of a classroom full of students. There is an odd sensation associated with being an integral part to someone's learning experience. Whether it's helping a student understand a difficult concept, or calming them

down as they have a panic attack about a test, it is a fulfilling responsibility to have. Working as a peer leader and tutor has been more beneficial to my character and growth as a student than anything else I have been a part of in college.

Plans for the Future: Short version: no clue! I plan on being alive in the future, but other than that, I have not put much thought into it. I am in the midst of an internal battle between going to graduate school and getting a Ph.D. in either chemistry or physics, or possibly pursuing my dream of being a writer. Who knows? I may even become a teacher. I just plan on doing things that sound interesting until I eventually find a niche.

Thoughts about the department, UT and Austin: My life has been a series of very bad decisions. Whether it was wearing those prescription glasses that tint when in the sun, or that year I decided to wear nothing but MC Hammer parachute pants, it has been, for the most part, an uphill battle between myself and my decision making. That being said, one of the few of good decisions (and possibly my best decision ever) was to come to UT Austin. The department has been nothing but supportive of me and my academic endeavors. I hear from my adviser each semester, and we often talk about what I plan on doing and what classes I'm taking. Now my only problem is finding a way to somehow tear myself away from this great university and city and actually graduate.



From left: Bryan Cranston, Donna Nelson, and Aaron Paul on *Breaking Bad* set. Photo courtesy Donna Nelson.

UT Alum Gets *Breaking Bad*'s Chemistry Right

On top of teaching and working in the lab as an organic chemistry professor at the University of Oklahoma, Donna Nelson, PhD '79, volunteered her expertise as scientific advisor for the Emmy award-winning *Breaking Bad*. Nelson worked with the producers by fine-tuning the scripts' terminology and information, making sure the science behind the hit show was accurate and believable.

"The writers took all of my suggestions and script changes," Nelson explains. "They were always interested in including scientific words in the dialogue; for example, they picked up the word 'precursor' from a conversation with me and used it in scripts several times. However, I was never able to convince them to use the word stoichiometry when I calculated for them how much meth would be made from 30 gal of methylamine. I guess it was just too hard to say."

Breaking Bad's season finale aired in September. When asked if she would be interested in this sort of role again, Nelson is enthusiastic. "Sure! I have had a set visit to Big Bang Theory, and I will be going back again, but these are as a guest so far. It is great entertainment and fabulous learning experiences - a lot of stretching."

Student and Alumni News

Alumni Updates

- **Jerry Suits** (*Ph.D. 1985*) is the editor of an ACS book with Michael Sanger that will be published this fall. *J.P. Suits & M.J. Sanger (Eds.) Pedagogic roles of animations and simulations in chemistry courses. ACS Symposium Series 1142, American Chemical Society: Washington, DC.* It includes 17 chapters written by experts in the field from around the world.
- **Daniel Price** (*B.S. 1989*) was awarded the degree of Doctor of Philosophy (Education) by the University of Nebraska-Lincoln in August 2011. Dr. Price is employed by Jefferson County Schools in Colorado.
- **Brian Trinke** (*Ph.D. 2003*) is a partner at Lathrop & Gage in Boston, where he manages a life science patent practice.
- **Tyler Barrett** (*B.S. 2013*) is employed with Dow Chemical at their world headquarters in Midland, Michigan and is currently in their 6-month Commercial Development Program for chemical sales. He reports that Dow values taking an equal portion of business and science majors in college for this program. Tyler majored in Chemistry at UT and did the Halliburton Business Foundations Program in 2012.

Alumni! Submit your news to
chemalum@cm.utexas.edu.

If you permit, the updates will be printed in the next issue.
 Please include your full name and graduation year.

Graduate Students Attend Conference in Switzerland

This September, graduate students Emma McInturff (Krische Group) and Chris Bates (Willson Group) attended the Reaxys Inspiring Chemistry conference in Grindelwald, Switzerland. Chris and Emma were finalists for the 2013 Reaxys Ph.D. Prize, which recognizes original and innovative research in organic, organometallic and inorganic chemistry. As finalists, they were invited to present their research at the Reaxys Ph.D. Prize Symposium and Poster Session, which took place at the conference.



Emma hiking in Switzerland

“During the conference, I presented at the poster session, and past finalists and the invited speakers gave oral presentations,” says Emma. “In all, it was three full days of very diverse, exciting new chemistry from around the world!”

“One of the most interesting aspects of the trip was to see and hear about the variety of chemistry currently being pursued throughout the world,” says Chris. “Very often we get boxed into our own little world and focus so much on our project(s) that we lose sight of the big picture. Fascinating! All of the finalists presented a poster at a collective poster session which was a great networking experience.”

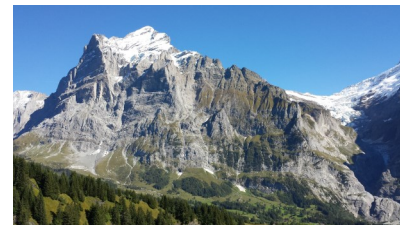


Photo taken by Chris while hiking

In addition to presenting research, meeting other finalists, and attending the conference, Emma and Chris enjoyed the scenic location of Grindelwald, a small town in the middle of the Bernese Alps. “After the conference, I was able to spend a few days around Grindelwald to hike and explore the area,” recalls Emma. “One highlight was the Jungfrau Railway, that tunnels through the mountains all the way to the one of the tallest peaks. Even though it was warm and sunny in the valleys, the top is covered in snow year round, and the view was incredible!”

Department Aims to Improve Diversity

The department has received two grants from the NIH and the Alfred P. Sloan Foundation (P.I. Jenny Brodbelt), totaling more than \$2.5 million, to help recruit, retain and support graduate students and post-doctoral fellows from groups that are underrepresented in the sciences. The NIH grant will go towards the new [Collaborative Opportunities](#)

[for Research Educators \(CORE\)](#) program, designed to train post-doctoral fellows in chemistry and related biomedical disciplines for academic careers. The Sloan grant will support a Program of Exemplary Mentoring at the graduate level. Both programs are aimed at increasing the participation of women and students from underrepresented racial and ethnic groups.

Department News

Ben Shoulders, Department Legend

This year, Dr. Ben Shoulders celebrated his 80th birthday and 54 years at UT as part of the department's Nuclear Magnetic Resonance (NMR) facility.

Dr. Shoulders started his career with a masters in organic chemistry and a background in electronics. While he was attending the University of Illinois in the 1950's, the school received one of the first NMR machines and put out a feeler for someone who could repair the machine and also do organic chemistry, so they could assist people in interpreting the data. "I didn't know anything at all about NMR but I had plenty of experience electronic wise, so they hired me," remembers Dr. Shoulders. Dr. Shoulders returned home to Texas and began attending UT in 1959. He began working full time for the department in September 1964.

Over the past fifty years, much has evolved in NMR. One of the most significant technological breakthroughs witnessed by Dr. Shoulders has been the introduction of superconducting magnets. However, he says the biggest change has been computers. "NMR machines did not have computers in the early days. It was really a bare machine. A good amateur radio operator could have built one," recalls Dr. Shoulders. "Computers have changed everything. Electronics have changed, computers have changed, the magnets have changed. And what people expect out of the machines has changed. There are many, many more experiments."

In addition to running the NMR facility, Dr. Shoulders teaches two classes –a course on NMR experimentation in the Spring and a course on interpretation in the Summer. When asked about the most rewarding part of his job, Dr.



Shoulders responds, "Helping students. They come in, sit in that chair you're sitting in. If they have a problem I can figure out or tell them what to do next, I feel good."

Professor Brent Iverson describes Dr. Shoulders as, "the best example of a combination facility director and teacher I have met. He has taught several generations of graduate students how to run NMR spectra, and more importantly, how to use various state-of-the-art NMR techniques to full advantage. When integrated over the years and numbers of students he has mentored, his contributions to cutting edge chemical research in the department is incalculable. On top of those considerable accomplishments, his ability to save money by repairing equipment in house and also securing favorable sales prices is the stuff of legends."

When Dr. Shoulders is not experimenting in the NMR lab or instructing students, he works for his wife Charlene on their Elgin ranch.



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Department of Chemistry Excellence Endowment

The Excellence Endowment was established in 1984 by the Board of Regents. Gifts to this endowment support graduate student and faculty recruiting efforts, staff excellence awards, and the annual faculty retreat.

To support Raymond E. Davis Endowed Scholarship in Chemistry and Biochemistry, the James E. and Ruth Ann Boggs Endowment, or the Department Excellence Endowment, visit the [UTexas Online Giving page](#). Please, fill in the name of the endowment you wish to support in the special information field. You may also visit the [College of Natural Sciences](#) for more giving opportunities. Thank you.